

Underground Cable Link

Supplying Europe's largest aluminium works, Norway



Cable data

Voltage	132 kV AC	
Power	200 MVA	
Length	5 000 m	3000 m
Conductor	1000 mm ² Al	1200 mm ² Al
Insulation	XLPE	XLPE
Weight	8.1 kg/m	9 kg/m
Customer	Norsk Hydro	
Year	2001	2002

Project content

XLPE cables
Terminations
Cable system design

Norsk Hydro is extending and modifying its aluminium works in Sunndal, Norway, making the upgraded plant – Nya Sunndal – the biggest in Europe. The total capacity will then increase from 154 000 metric tons of aluminium per year to 321 000 metric tons per year.

A plant of this nature requires a huge amount of current for its power supply and the whole plant operation is based on a 132 kV system. There will be an electricity supply backup in all units of the plant. Breakdowns in the electricity supply cannot be allowed to interrupt production.

ABB's scope of supply

ABB has been appointed as the main supplier for the electrotechnical part of the project. The factors that clinched the deal in favour of ABB were apart from a very good offer, delivery assurance and their positive experience from other earlier projects.

Operating reliability, minimal maintenance, negligible impact on the environmental and space requirements are just some of the demands met by ABB.

Through winning the contact, ABB will supply capacitor banks, rectifier installation, automation, 24 kV plant supply and a 132 kV high voltage installation.

The rectifier installation consists of 5 rectifier groups of 69.8 kA/1500 VDC, where each rectifier group consists of an auto-controlled transformer that is fed with 132 kV cables.



The diode rectifiers are water and air cooled, while the transformers are oil and air cooled. The installation also includes a control system for operations and supervision as well as a compensation and filter installation.

ABB's switchgear solution includes 38 integrated switchgear modules featuring ABB's new, combined multi-function unit. This combines a circuit-breaker, disconnecter and instrument transformer in a polymer insulated unit connected to the integrated busbar. The order is a part of a general agreement between ABB and Hydro Aluminium Sunndal for 3+3+3 years.

The technology and main products including the 132 kV cables are developed and supplied by ABB in Sweden while ABB Norway will provide engineer services and installation.

The cables

The cables for Sunndal's Aluminium Works have a water tight (LT) compacted aluminium conductor and an XLPE insulation with copper wire screen. They have longitudinal water sealing with swellable tape and radial water blocking with aluminium laminate bonded to the outer HDPE sheath.

Installation

The 1000 mm² cable will be installed in one group, consisting of 3 cables per group, in pipes in trefoil formation. The 1200 mm² cable will be installed in five groups, consisting of 3 cables per group, in pipes in two horizontal planes.

Commissioning

The plant, which is estimated to be completed by 2004, is expected to provide increased profitability as well as an improved environment and productivity.

BU Cables

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